REMARKS/ARGUMENTS

Favorable reconsideration of this application in view of the above amendments and in light of the following discussion is respectfully requested.

Claims 1-8 and 10-18 are pending, with Claims 13-18 withdrawn from consideration. Claims 1, 3 and 10 are amended, and Claim 9 is canceled without prejudice or disclaimer. No new matter is introduced.[1]

In the outstanding Office Action, Claims 1-4 and 6-12 were rejected under 35 U.S.C. § 102(b) as anticipated by Angell (U.S. Patent No. 5,658,423); and Claim 5 was rejected under 35 U.S.C. § 103(a) as unpatentable over Angell in view of Le (U.S. Patent No. 6,153,155).

Applicants acknowledge with appreciation the courtesy of Examiner Anya in conducting a personal interview with Applicants' representative on January 16, 2009. During the personal interview, Applicants' representative discussed amendments to the claims that clarify how the weighting factor is determined and applied. Examiner Anya indicated the amendments that were discussed overcome the rejections based on Angell and Le.

Following from this discussion, amended to Claim 1 clarifies that the method of monitoring a process system for processing a substrate during the course of the semiconductor manufacturing includes a step of applying a *first* weighting factor to *a first* one of a plurality of data variables and a *second* weighting factor to *a second* one of the plurality of data variables during a principal components analysis. Amended Claim 1 further clarifies the first weighting factor is based on a first relative importance of the first one of the

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[1] Support for the amended claims can be found at least at paragraphs [0048]-[0057] of the specification as originally filed.

plurality of data variables, the second weighting factor is based on a second relative importance of the second one of the plurality of data variables, and the first relative importance is different from the second relative importance.

Turning to the applied references, Angell describes real time monitoring of a plasma process with principal component analysis (PCA) at, for example, column 7, line 15 to column 8, line 15. In particular, as illustrated in Figure 2B of Angell, Angell describes generating a matrix Y of real-time spectra, with columns representing the variables, and rows representing time-samples of a process. However, Angell fails to disclose or suggest applying the claimed first or the claimed second weighting factor to any of the data variables.

Le fails to cure the deficiency in Angell. Le relates to monitoring plasma processes with multivariate statistical analysis of plasma emission spectra. In particular, Le describes that the intensity of each of a number of a plurality of radiation wavelengths that are emitted from a plasma process are monitored as the process proceeds.[2] Indications of correlations between the intensities of the monitored wavelengths are produced as the process proceeds.[3] The produced correlation indications are then compared with a pre-specified correlation indication generated based on historical conditions for the plasma process, to determine the status condition of the process as the process proceeds.[4]

Le further describes adapting the plasma process analysis technique to reflect drifts in the plasma process over time. Le describes, for example, a moving average, such as an exponentially graduated moving average, is employed to update mean and covariance factors

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[2] See Le at column 2, lines 52-55.
[3] See Le at column 2, lines 55-58.
[4] See Le at column 2, lines 58-62.

employed in a Hotelling's $T^2(t)$ analysis in a manner that corresponds to the drift.[5] In particular, as explained at column 18, line 53 to column 19, line 31 of Le, an updating function is utilized to weight more recent process run conditions most strongly, with previous process run conditions weighted less strongly, thereby reflecting the fluctuation trend in the process conditions over time.

By contrast, Claim 1 recites a first weighting factor that is based on a *first relative importance* of a first one of a plurality of data variables, and a second weighting factor that is based on a *second relative importance* of a second one of the plurality of data variables. Thus, unlike Le, the weighting factors recited in amended Claim 1 relates to a *relative importance* of two different data variables. Le, on the other hand, utilizes weight matrixes to respond to *fluctuations over time*.

Accordingly, even the combined teachings of Angell and Le fail to disclose or suggest all the features recited in amended independent Claim 1. It is submitted Claim 1 and the claims depending therefrom are in condition for allowance.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1-8 and 10-18 is earnestly solicited.
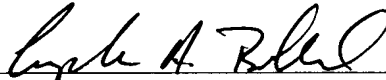
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[5] See Le at column 17, lines 33-40.

Should the Examiner deem that any further action is necessary to place this

application in even better form for allowance, the Examiner is encouraged to contact

Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

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